

MARK SCHEME for the May/June 2013 series

5070 CHEMISTRY

5070/41

Paper 4 (Alternative to Practical), maximum raw mark 60

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

Cambridge will not enter into discussions about these mark schemes.

Cambridge is publishing the mark schemes for the May/June 2013 series for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level components and some Ordinary Level components.

Page 2	Mark Scheme	Syllabus	Paper
	GCE O LEVEL – May/June 2013	5070	41

- 1 (a) syringe (1) [1]
- (b) turns lime water milky (1) [1]
- (c) 66 (1) cm³ [1]
- (d) 0.00275 (1) moles [1]
- (e) (i) 0.0055 (1) moles [1]
- (ii) 84 (1) [1]
- (iii) 0.462 (1) g [1]
- [Total: 7]
- 2 (a) brown (1) (orange) [1]
- (b) (i) brown fumes begin to move into the top jar (1) [1]
- (ii) brown colour fumes throughout both jars OR colour is lighter (1) [1]
- (iii) evaporation OR diffusion (1) [1]
- (c) (i) CH₃ – CH = CH – CH₃ OR CH₃ – CH₂ – CH = CH₂ (1)
- $$\begin{array}{c} \text{CH}_3 - \text{C} = \text{CH}_2 \\ | \\ \text{CH}_3 \end{array} \quad (1)$$
- [2]
- (ii) molecule contains a double bond (1) [1]
- (d) (i) (pass an alkene through bromine water. If unsaturated) bromine solution turns colourless (1) [1]
- (ii) C₄H₈ + Br₂ → C₄H₈Br₂ (1) [1]
- [Total: 9]

Page 3	Mark Scheme	Syllabus	Paper
	GCE O LEVEL – May/June 2013	5070	41

3 (c) [Total: 1]

4 (d) [Total: 1]

5 (c) [Total: 1]

6 (c) [Total: 1]

7 (c) [Total: 1]

8 (a) 4.96 (1) g [1]

(b) (i) green / colourless to (ii) pink (1) [1]

(c) 22.8 39.7 31.3
0.0 17.5 8.9 1 mark for each correct row or column to benefit of candidate (3)
22.8 22.2 22.4

mean titre = 22.3 (1) cm³ [4]

(d) 0.000446 (1) moles [1]

(e) 0.00223 (1) moles [1]

(f) 0.0223 (1) moles [1]

(g) 3.39 (1) g [1]

(h) 1.57 (1) g [1]

(i) 0.087 (1) moles [1]

(j) 3.91 (1) [1]

(k) x = 4 [1]

Page 4	Mark Scheme	Syllabus	Paper
	GCE O LEVEL – May/June 2013	5070	41

- (l) (i) iron(III) sulfate (1) [1]
(ii) oxidation / reacts with oxygen in the air (1) [1]
(iii) red / brown precipitate (1) [1]

[Total: 17]

9 (a) transition metal present (1)

- (b) (i) blue ppt (1)
(ii) insoluble (1)

- (c) (i) blue ppt (1)
(ii) dissolves to form a DARK blue solution (1)

(d) HNO_3 (1) / AgNO_3 (1) white ppt (1)

W is CuCl_2 (1)

[Total: 9]

10 (a) exothermic (1)

[1]

(b) 26.8, 30.2, 33.6, 35.5 (1) all correct

6.8, 10.2, 13.6, 15.5 (1) all correct

[2]

(c) all points plotted correctly (1)

points joined by two intersecting straight lines (1 mark for each line)

(if lines are connected by a curve, 1 mark from 2)

(line not passing through zero, 1 mark from 2)

[3]

(d) (i) $8.5\text{ }^\circ\text{C}$ (1)

[1]

(ii) $32\text{ }^\circ\text{C}$ (1)

[1]

(e) all acid has been neutralised (1)

[1]

Page 5	Mark Scheme	Syllabus	Paper
	GCE O LEVEL – May/June 2013	5070	41

(f) (i) 0.45 (1) g [1]

(ii) 0.01875 (1) moles [1]

(iii) $0.0375 \times 2 = m \times 50 / 1000$ (1)
 $m = 0.75 \text{ mol} / \text{dm}^3$ (1) [2]

[Total: 13]